

## CLAIMS

What is claimed is:

1. A process for manufacturing an integrated circuit package comprising:  
forming a plurality of balls on a first surface of a substrate;  
mounting a semiconductor die to said substrate such that bumps of said semiconductor die are electrically connected to conductive traces of said substrate;  
encapsulating said semiconductor die and said balls in an overmold material on said substrate such that portions of said balls are exposed;  
forming a ball grid array such that bumps of said ball grid array are electrically connected to said conductive traces; and  
singulating said integrated circuit package.
2. The process according to claim 1, wherein said forming said ball grid array comprises forming said ball grid array on a second side of said substrate.
3. The process according to claim 1, wherein each of said plurality of balls is attached to respective solder ball pads on first surface of substrate.
4. The process according to claim 1, wherein mounting said semiconductor die comprises fixing said die to said substrate and wire bonding said bumps of said semiconductor die to said conductive traces of said substrate.
5. The process according to claim 1, wherein mounting said semiconductor die comprises fixing said semiconductor die to said first surface of said substrate.
6. The process according to claim 1, further comprising laminating said substrate to a metal strip prior to forming said plurality of balls and wherein said forming said ball grid array comprises forming said bumps of said ball grid array on the exposed portions of said balls such that bumps of said ball grid array are electrically connected to said conductive traces of said substrate via said balls.
7. The process according to claim 6, wherein mounting said semiconductor die to said

substrate comprises mounting said semiconductor die in a cavity in said substrate, to said metal strip such that said semiconductor die is mounted to said substrate via said metal strip.

8. The process according to claim 1, wherein forming said plurality of balls comprises forming a plurality of balls circumscribing said semiconductor die.

9. The process according to claim 1, wherein said plurality of balls are formed so as to be electrically connected to said conductive traces of said substrate.

10. The process according to claim 1, wherein said balls are deformed during said encapsulation.

11. The process according to claim 1, further comprising mounting a die adapter on said semiconductor die prior to encapsulating.

12. The process according to claim 1, further comprising mounting a heat spreader to said balls.

13. An integrated circuit package comprising:  
a substrate having a plurality of conductive traces;  
a plurality of balls disposed on a first surface of said substrate;  
a semiconductor die mounted to said substrate such that bumps of said semiconductor die are electrically connected to conductive traces of said substrate;  
an overmold material encapsulating said semiconductor die and said balls on said substrate such that portions of said balls are exposed; and  
a ball grid array in electrical connection with said conductive traces.

14. The integrated circuit package according to claim 13 wherein said ball grid array is disposed on a second surface of said substrate.

15. The integrated circuit package according to claim 13, wherein said plurality of balls is attached to respective solder ball pads on first surface of substrate.

16. The integrated circuit package according to claim 13, wherein said bumps of said semiconductor die are electrically connected to said conductive traces by wire bonds.

17. The integrated circuit package according to claim 13, wherein said semiconductor die is fixed to said first surface of said substrate.

18. The integrated circuit package according to claim 13, further comprising a metal strip laminated to a second surface of said substrate, wherein bumps of said ball grid array are mounted to said plurality of balls.

19. The integrated circuit package according to claim 18, wherein said semiconductor die is mounted to said metal strip in a cavity in said substrate such that said semiconductor die is mounted to said substrate via said metal strip.

20. The integrated circuit package according to claim 13, wherein said plurality of balls circumscribe said semiconductor die.

21. The integrated circuit package according to claim 13, wherein said plurality of balls electrically connected to said conductive traces of said substrate.

22. The integrated circuit package according to claim 13, wherein said balls are deformed.

23. The integrated circuit package according to claim 13, further comprising a die adapter mounted on said semiconductor die and encapsulated in said overmold material.

24. The integrated circuit package according to claim 13, further comprising a heat spreader mounted to said balls.

25. The integrated circuit package according to claim 13, wherein said plurality of balls is comprised of a plurality of solder balls.